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Rankin, Hill, Porter & Clark, LLP			BROWN, SHEREE N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/628,738

Applicant(s)

AYACHITULA ET AL.

Examiner

Sheree N. Brown

Art Unit

2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/31/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 15-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 15-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to the Request for Continued Examination filed on 10/31/2007. Claims 1-9 and 15-42 are pending and presented for examination. Claims 10-14 have been cancelled. Claims 1, 6, 15, 26, 36, 39 and 40 have been amended. Claims 1, 15, 24, 36, 39 and 40 are the independent claims and the remaining claims are the dependent.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9 and 15-42 are rejected under 35 U.S.C. 103 (a) as being unpatentable over anticipated by Lichtman et al (US Patent No. 5,793,979, Date of Patent: August 11, 1998, hereinafter, Lichtman) in view of Waldo et al (US Patent No. 6,016,500, Date of Patent: January 18, 2000, hereinafter Waldo).

Claims 1, 24, 36 and 40:

Regarding Claims 1, 24, 36 and 40, Lichtman discloses the method comprising:

- **using the resource deallocation module, detecting an impending execution of the automatic memory management algorithm** (column 43, lines 11-14, in response to a "deallocate" instruction by the configuration manager, the

assignment element deletes the resource assignments in the assigned resource table for the designated device, which is equivalent to "using the resource deallocation module detecting an impending execution of the automatic memory management algorithm", Lichtman);

- **responsive to the detecting, and prior to executing the automatic memory management algorithm; accessing, by the resource deallocation module, said session object of the user session** (column 40, lines 36-40, wherein the configuration manager instructs the arbitrators to free the resource elements assigned to the removed device, wherein the resource elements previously assigned for use by the removed device become available for use by other devices of the computer as required by future configuration operations, wherein this is interpreted to be equivalent to "responsive to the detecting, accessing, by the resource deallocation module, an object of the user session", Lichtman);
- **identifying, by the resource deallocation module, one or more obsolete external resource references of said session object, wherein said one or more obsolete external resource references have not been released by said session object** (column 40, lines 40-43, wherein the configuration manager uploads the device driver corresponding to the removed device, which is interpreted to be deallocating allocated external resource of each object of a user session and wherein it locates data objects that no longer can be used, which corresponds to the "removed device", and this device driver becomes available for use by other compatible devices, wherein overall this is interpreted to be equivalent to "identifying, by the resource

deallocation module, one or more external resource references of said object"

Lichtman);

- **using the resource deallocation module, releasing said one or more obsolete external resource references by a set of rules for said session object** (column 43, lines 16-19, wherein a representative instruction for the memory arbitrator is the command FREE (start=2000 h, end =2200 h), which clears the assignment for the allocated memory extending between 2000h and 2200 h, which is interpreted to be equivalent to "using the resource deallocation module, releasing said one or more external resource references by a set of rules for said object", Lichtman);

- **and repeating the accessing, identifying, and releasing, by the resource deallocation module, for each session object of the user session** (column 21, lines 29-41, wherein upon completing collection of device information from the detected device, an inquiry is conducted to determine whether device information has been obtained from all of the devices connected to the interface bus and if the answer is negative, the "NO" the process continues to the collection of device information from those remaining devices and in contrast, the "YES" branch is followed to enable the sequence of identifying device drivers, arbitrating and allocating the resources 14, and loading the identified device drivers for the detected devices 20 of the interface bus 17' and this process will be repeated until all of the system busses 18 within the computer 8 are detected, wherein this is interpreted to be equivalent to "repeating the accessing, identifying, and releasing, by the resource deallocation module, for each object of the user session", Lichtman).

Lichtman discloses the above limitations. However, Lichtman does not disclose wherein the garbage collector for removing session objects created for the user session, wherein said session objects of the user session are not referenced by a remaining object and which do not reference one or more external resources. On the other hand, Waldo does disclose "the garbage collector for removing a session object created for the user session, wherein said session object of the user session is not referenced by a remaining object and which does not reference one or more external resources" (See Figure 4, Item 420 & Column 8, Lines 20-35).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate Waldo teachings into Lichtman system. A skilled artisan would have been motivated to combine as suggest by Waldo [column 6, lines 5-7], establishing and implementing an improved method for "freeing" memory and preventing memory leaks.

Claims 2 and 25:

Regarding claims 2 and 25, Lichtman discloses the above limitations. However, Lichtman does not disclose wherein performing the accessing, identifying, releasing, and repeating as a Listener method belonging to a Java MyListener class in a Java environment; and registering the Listener method with the user session.

On the other hand, Waldo does disclose wherein performing the accessing, identifying, releasing, and repeating as a Listener method belonging to a Java MyListener class in a

Java environment (column 6, lines 5-7, wherein the method invocation, i.e. MI, may consist of a number of software modules preferably written in the JAVA programming language, and its inherent and known that JAVA provides its own classes, wherein everything is an object and all code is written inside a class and

column 15, lines 12-62, wherein "an object is an instance of a Class

", and so forth, in which a basic class in Java programming language is shown and wherein a Listener Method is interpreted to process specific classes of events, with individual listener objects being assigned to specific UI objects; and Figures 10 and 11, which illustrates wherein a user is notified that a session is about to expire, and refer to columns 17 and 18, wherein these figures are discussed and interpreted to correspond to "the session Listener instance is notified and operates to gracefully release resources held by the user session objects of the about to expire user session" as defined within applicant's specification on page 9, lines 10-12, Waldo); and registering the Listener method with the user session (column 16, lines 52-59, respectively, Waldo).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate Waldo teachings into Lichtman system. A skilled artisan would have been motivated to combine as suggest by Waldo [column 6, lines 5-7], establishing and implementing an improved method for "freeing" memory and preventing memory leaks.

Claims 3 and 26:

Regarding claims 3 and 26, the combination of Lichtman in view of Waldo teaches wherein the registering includes setting a session attribute to correspond to an instance of the Listener method (page 16, lines 53-59, wherein the types of access include read access, and write access, allocation access, re-allocation access and sub- block access, wherein the privilege fields indicates the privilege level of the user or the client to form a valid request the client request much contain both the requested storage location and the desired lease period, which is interpreted to be equivalent to "registering includes setting a session attribute to correspond to an instance of the

Claims 4 and 27:

Regarding claims 4 and 27, the combination of Lichtman in view of Waldo teaches wherein the detecting includes notifying the registered Listener method of the impending expiration of the user session (page 17, lines 13-14, wherein if the client has not completed its use of the file, the client determines if the lease is about to expire, Waldo).

Claims 5 and 28:

Regarding claims 5 and 28, the combination of Lichtman in view of Waldo teaches wherein the detecting includes detecting an impending expiration of the user session (Figure 10, diagrams 10008, wherein if the client has not completed its use of the file, the client determines if the lease is about to expire and wherein its further defined in column 17, lines 14-20, wherein the client performs a step of invoking the get Duration

method and determining whether the remaining time is within a predetermined threshold, and if the lease is not about to expire processing continues and if the lease is about to expire the client sends a renew request to the server and so forth, Waldo).

Claims 6 and 29:

Regarding claims 6, the combination of Lichtman in view of Waldo teaches further including executing the automatic memory management algorithm by said garbage collector (See Waldo Figure 4, Item 420 & Column 8, Lines 20-35) to remove said session objects created for said user session (Figure 10, diagram 10006, wherein done with file is defined, in which the yes, is interpreted to be closing the file, Waldo).

Claims 7 and 30:

Regarding claims 7 and 30, the combination of Lichtman in view of Waldo teaches wherein the identifying includes identifying a file resource (Figure 10, diagram 10005 and column 17, lines 6-7, Waldo); and the releasing includes closing said file resource (Figure 10, diagram 10006, wherein done with file is defined, in which the yes, is interpreted to be closing the file, Waldo).

Claims 8 and 31:

Regarding claims 8 and 31, the combination of Lichtman in view of Waldo teaches wherein the identifying includes identifying an allocated resource (column 16, lines 16-19, wherein the resources which are used by the devices during computing operation

are allocated based upon the device information, Lichtman); and the releasing includes deallocating the allocated resource (column 43, lines 11-14, Lichtman).

Claims 9 and 32:

Regarding claims 9 and 32, the combination of Lichtman in view of Waldo teaches wherein the accessing of said session object of the user session includes obtaining an object identifier corresponding to said session object from the object graph (column 5, lines 2-12, wherein a computer database maintained by the computer or from the user via disk containing the device driver, and the device driver is obtained by accessing a select program file stored on either a fixed disk or another type of mass memory storage device and wherein the computer database can contain device information associated with a particular device and so forth, Lichtman); and retrieving said object using the object identifier (column 8, lines 21-26, wherein the logical configuration data can be retrieved from the particular device by reading the logical configuration data from the memory storage device for that device and the logical configuration data is thereafter stored within the computer memory and is associated with the device identification code for the particular device, Lichtman).

Claims 15 and 39:

Regarding Claims 15 and 39, Lichtman discloses a system comprising:

- **a software program configured to initiate, process, and terminate user sessions** (column 3, lines 26-29, wherein the present invention provides a system for

configuring the hardware and software components of a computer system by optimally allocating system resources for use by computer devices; column 11, lines 61-64, wherein comprises a set of computer programs that control the internal functions of the computer systems thereby allowing the computer to run application software; column 16, lines 23-26, wherein in response to this allocation of the resources, the device driver for each of the devices is loaded and the devices are subsequently activated for operation with the computer, thereby terminating this configuration; columns 28-29, lines 66-67 and lines 1-8, column 29, lines 22-29, wherein the software archive contains information related to location and identify of various programs files, including device drivers, wherein the hardware archive can contain hardware related information including the identity of detected devices and column 35, lines 44-50, wherein the event detect element responds to commands contained in certain instruction signals from the configuration manager a and these commands typically instruct the event detect element to conduct specified query-type operations, including deletion of device information stored within a particular device node and to start or to terminate designated tasks, wherein overall this cited information corresponds to and is equivalent to "a software program configured to initiate, process, and terminate user sessions", Lichtman);

- **an object graph defining an interrelationship between objects of said user session** (column 15, lines 54-64, respectively and column 40, lines 44-67, wherein the enumerator detects the connection of a new device to its assigned system bus and the detection of this event is reported to the configuration manager and, in response, the configuration manager instructs the reporting enumerator to enumerate the devices on this affected system bus and wherein this enumerator responds to the

enumerate instruction by collecting device information from each of the devices on the affected system bus and for the newly installed device, a device node corresponding to this device is added to the hardware tree and wherein if the new device represents a component which has not been previously installed with the computer 8, this new device information is stored in the registry and upon completion of the enumeration task, appropriate device drivers are identified for use with the detected devices and the elements for the resources are subsequently allocated and the identified device drivers are loaded, wherein the above-described process enables the installation of a new device within the computer without substantial intervention by the user, which is interpreted to be equivalent to "an object graph defining an interrelationship between objects of said user session", Lichtman);

- **a resource deallocation module linked to the software program and responsive to an impending termination of said user session to deallocate obsolete allocated external resources of each object of one or more objects created for a user session wherein said obsolete allocated external resources have not been released by said objects (REFER to claims 1, 24, and 30, wherein this limitation is substantially the same/or similar and therefore rejected under the same grounds, Lichtman);**

- **and an automatic memory management garbage collector module invoked subsequent to a completion of the deallocation performed by the resource deallocation module for removing each of said one or more objects which is not referenced by a remaining of said one or more objects and which does not reference one or more of said**

allocated external resources (REFER to claims 1, 24, and 30, wherein this limitation is substantially the same/or similar and therefore rejected under the same grounds, Lichtman).

Claim 16:

Regarding claim 16, the combination of Lichtman in view of Waldo teaches a Java virtual machine implementing the software program (column 6, lines 5-7, wherein the MI component may consist of a number of software modules preferably written in Java TM programming language, Waldo), the resource deallocation module (REFER to claims 1, 24, 36, and 40, wherein this limitation has already been addressed, Lichtman), and the automatic memory management module (REFER to claims 1, 24, 36, and 40, wherein this limitation has already been addressed, Lichtman). It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate Lichtman teachings for detecting objects that are no longer used to free up space within memory to improve a system performance.

Claim 17:

Regarding claim 17, the combination of Lichtman in view of Waldo teaches wherein the resource deallocation module includes a deallocation listener method adapted to deallocate the allocated external resources of each object of said user session responsive to a notification of the impending termination of said user session (column 3, lines 61-67, wherein such failures can take the form of computer or application failure or network failure that prevent delivery of messages notifying the garbage collection system that a resource is no longer being referenced and column 18, lines 11-31, wherein the server determines whether it has received a renew request from

the client, if the renew request has been received, the server renews the lease, and if, however, a renew has not been received, the server determines if a cancel request has been received by the client invoking the cancel method, and if the client invoked the cancel method, the server cancels the lease by deleting the object stored in step 11010 from the Java space, and if this is the last outstanding lease on the file, the server deletes the file, and if a cancel request was not received, the server determines if the lease has expired and if the lease has not expired, processing continues, wherein however, if the lease has expired, the server knows that a failure has occurred and therefore invokes the recover method on the object in the Java space for the client with the lease that terminated, Waldo).

Claim 18:

Regarding claim 18, the combination of Lichtman in view of Waldo teaches wherein the resource deallocation module is linked to the software program by registration of the deallocation listener method with said user session (column 8, lines 11-20, respectively, Lichtman).

Claim 19:

Regarding claim 19, the combination of Lichtman in view of Waldo teaches wherein the resource deallocation module is linked to the software program by an assignment of an attribute of said user session to the deallocation listener method (column 8, lines 50-53, wherein the arbitrator also includes an assignment element for assigning the particular resource element for use by the selected device in response to determining that the particular resource element is available for use by the selected device, Lichtman).

Claim 20:

Regarding claim 20, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module being adapted to access the object graph to identify the objects of the user session (column 11, lines 47-54, wherein the application call processor uses the grant period to update recorded grant period and to determine when the resource corresponding to the reference of its dirty call may be reclaimed, wherein the server call processor 1131 also monitors the reference counts and grant periods corresponding to references for resources that it manages, Waldo).

Claim 21:

Regarding claim 21, the combination of Lichtman in view of Waldo teaches wherein the automatic memory management module is invoked by the software program to process a plurality of user sessions including said user session (column 16, lines 2-15, wherein data processing system is defined along with its parts and wherein the client request access to one or more of the files by requesting a lease from the server, Waldo).

Claim 22:

Regarding claim 22, the combination of Lichtman in view of Waldo teaches wherein the automatic memory management module is invoked by an operating system to process software including said software program that operate under said operating system (Figure 8, all feature, wherein it illustrates a client platform and a sever platform and column 3, lines 1-7, wherein distributed garbage collection describes a facility provided by a language or runtime system for distributed systems that automatically manages resources used by an application or group of application running on different computers in a network, Waldo).

Claim 23:

Regarding claim 23, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module is integrated with the automatic memory management module as a single unitary memory management unit that executes prior to the termination of said user session (page 17, lines 35-49, Waldo).

Claims 33, 37, and 41:

Regarding Claims 33, 37, and 41, the combination of Lichtman in view of Waldo teaches identifying said session object of the user session; and, determining an object type of said session object (column 15, lines 9-25, respectively, Waldo).

Claims 34, 38, and 42:

Regarding Claims 34, 38, and 42, the combination of Lichtman in view of Waldo teaches wherein said releasing includes releasing said one or more external resource references by a set of rules for said object, including rules based on said object type (REFER to claims 1, 24, 36 and 40, wherein this limitation is substantially the same/or similar and therefore rejected under the same grounds, Lichtman).

Claim 35:

Regarding Claim 35, the combination of Lichtman in view of Waldo teaches wherein said one or more external resource references are associated with at least one of file handles, database connections, sockets, and threads (column 7, lines 3-6, wherein a device installation or removal can be detected by intercepting a particular interrupt signal or by periodically polling all of the available sockets of the bus to determine the installed devices, Lichtman).

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Prior Art Made of Record

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Waldo et al (US Patent No. 6,016, 500)
Lichtman et al (US Patent No. 5,793,979)

Response to Arguments

5. Applicant's arguments filed 10/31/2007 have been fully considered but they are not persuasive.

Applicant Argument #1:

Applicant argues on page 13, "In accordance with the above, therefore, applicants respectfully submit that since Lichtman does not disclose a garbage collector as noted by the Examiner at the bottom of page 4 of the Office Action, Lichtman cannot possibly "detect an impending execution of the automatic memory management algorithm" by the garbage collector as set out in independent claim 1 of the present application. Waldo uses the expression "garbage collector" but the only suggestion to combine it with Lichtman comes from the pending claims. As argued previously by applicants, the actions of Lichtman's assignment element cited in the Office Action are in response to a "deallocate" instruction by a configuration manager. This is not equivalent to "detecting an impending execution of the automatic memory".

Examiner Response to Argument #1:

Examiner is not persuaded. Examiner maintains the combination of Waldo and Lichtman teaches the above mentioned limitations. Specifically, Lichtman teaching in Column 43, lines 11-14 meets applicant teaching of "detecting an impending execution of the automatic memory management algorithm" and Waldo goes on to teach this

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garbage collector in Figure 4, Item 420 & Column 8, lines 20-35. Hence, the combination of the two references teaches applicant's claim limitation.

MPEP § 2106 states Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed Cir. 1997). Consequently, examiner maintains the rejection.


Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheree N. Brown whose telephone number is (571) 272-4229. The examiner can normally be reached on Monday-Friday 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Brown
Patent Examiner, AU 2163
Technology Center 2100
January 31, 2008

2/1/08

Hung Vy
For SPE DON WONG